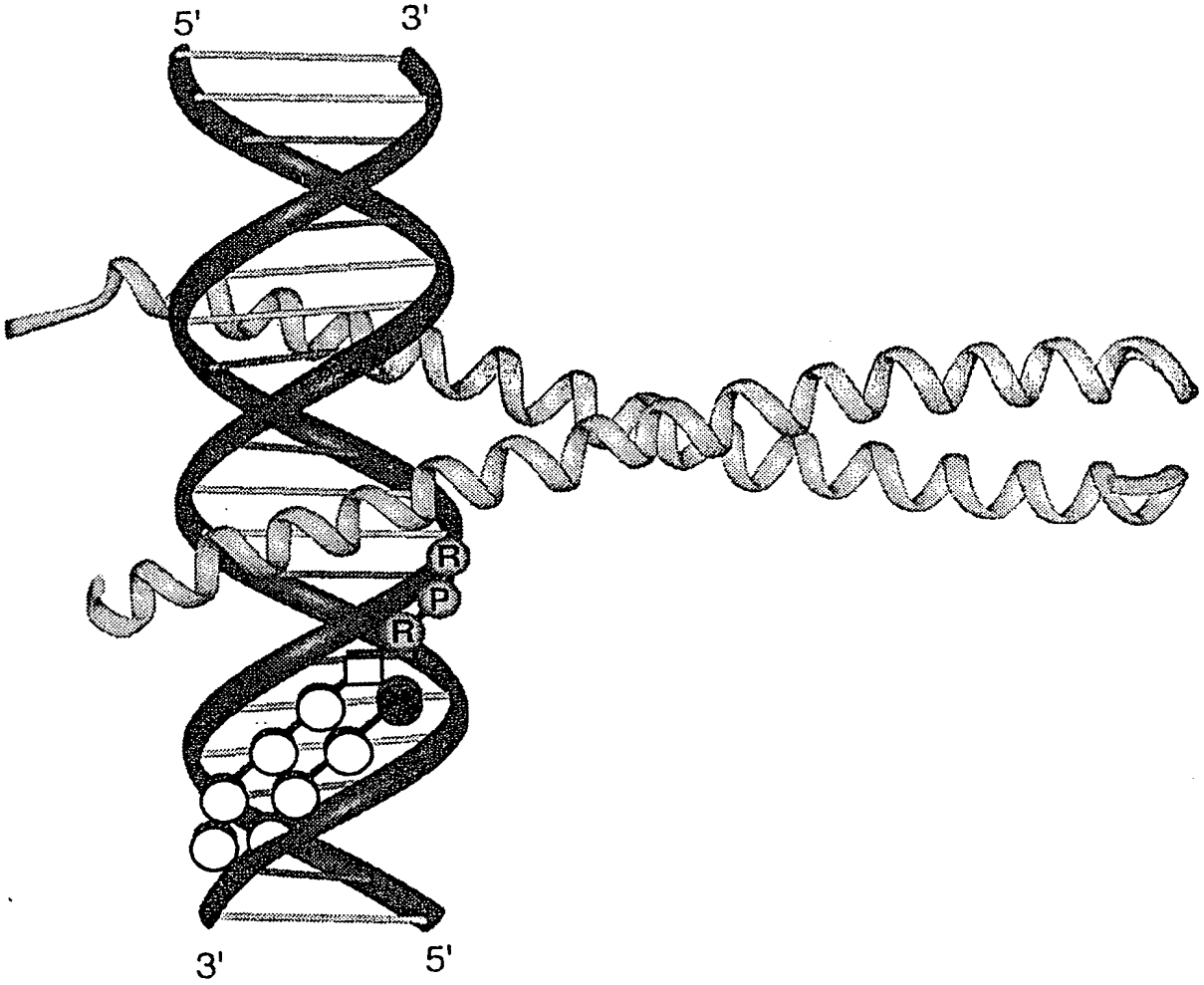


FIG. 1A

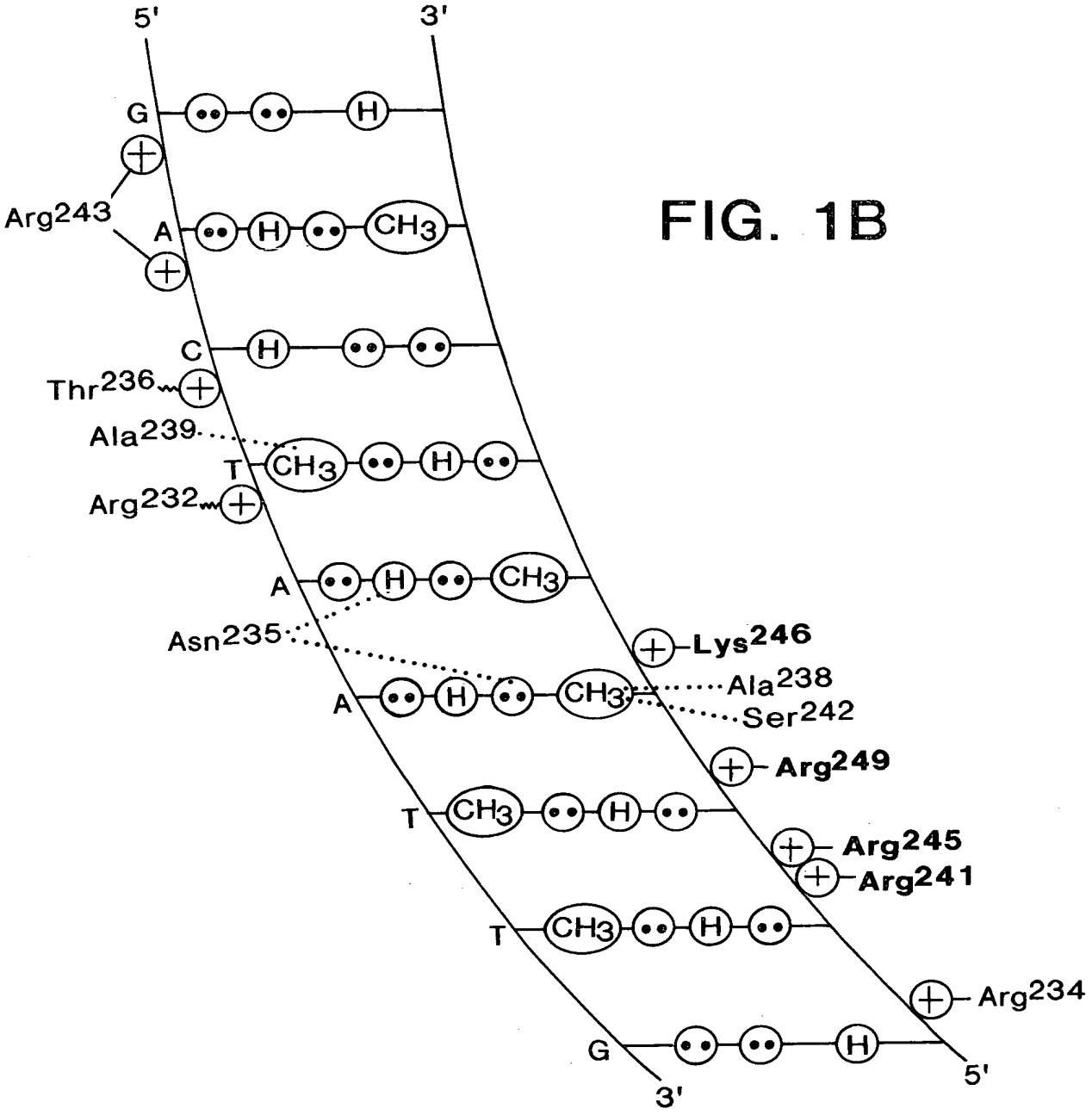

5'
3'
G
H
Arg243
A
H
CH3
C
H
Thr236
Ala239
T
CH3
H
Arg232
A
H
CH3
Asn235
Lys246
A
H
CH3
Ala238
Ser242
Arg249
T
CH3
H
Arg245
Arg241
T
CH3
H
Arg234
G
H
3'
5'

FIG. 1B

FIG. 1C

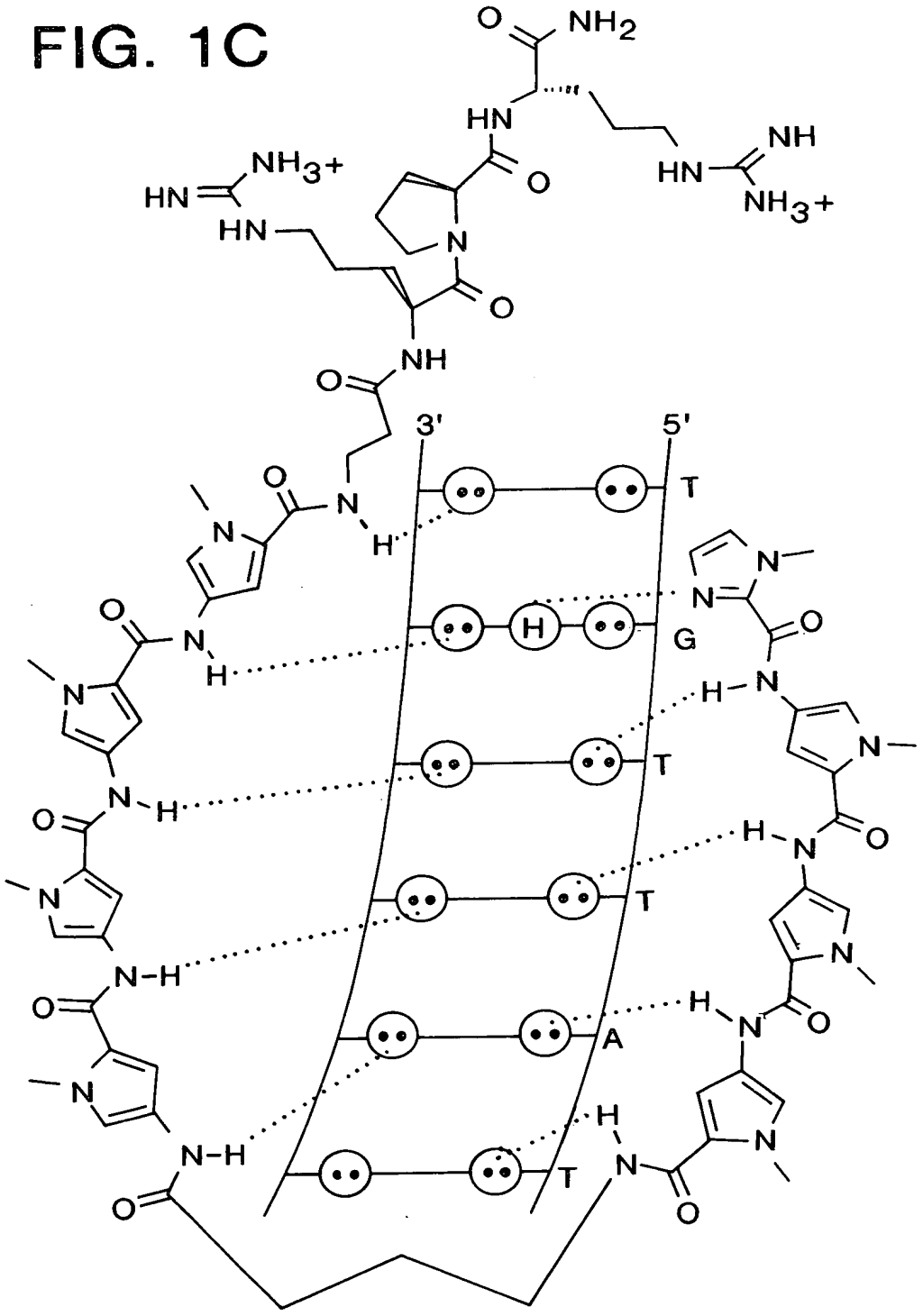
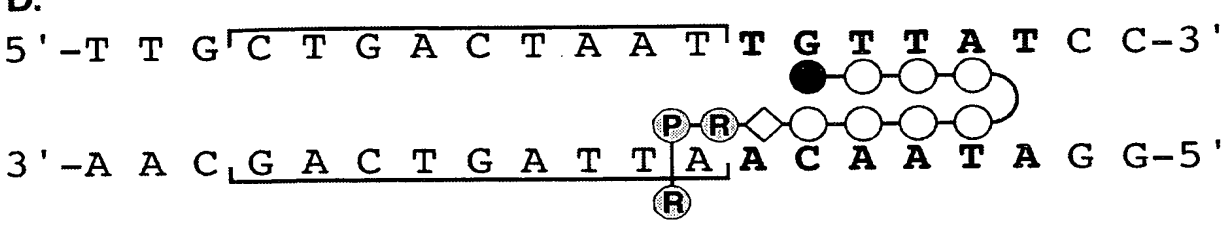
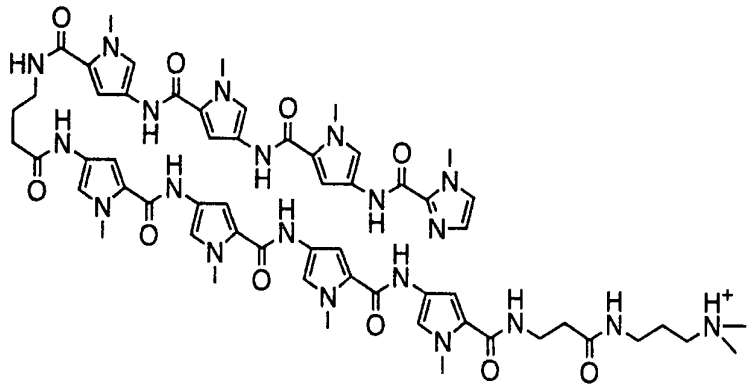

O
NH2
HN
NH
HN
NH3+
HN
NH3+
HN
N
O
NH
O
3'
5'
T
N
H
N
O
N
H
G
H
N
N
O
N
H
T
N
H
N
O
H
N
O
N
T
N
N-H
O
H
N
O
N
A
N
N-H
H
N
T
N
O

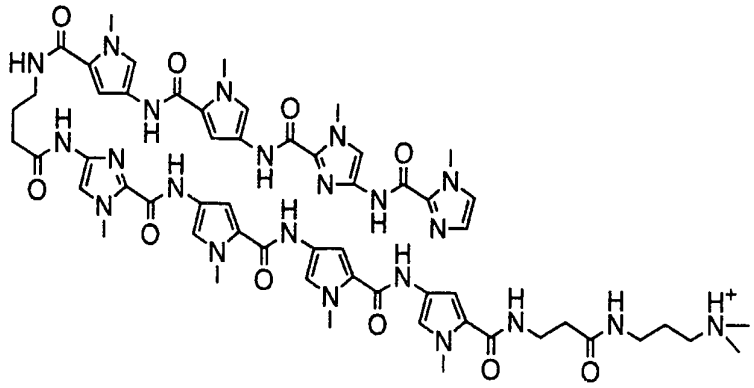
FIG. 1D


D.
5'-T T G C T G A C T A A T T G T T A T C C-3'
P
R
3'-A A C G A C T G A T T A A C A A T A G G-5'
R



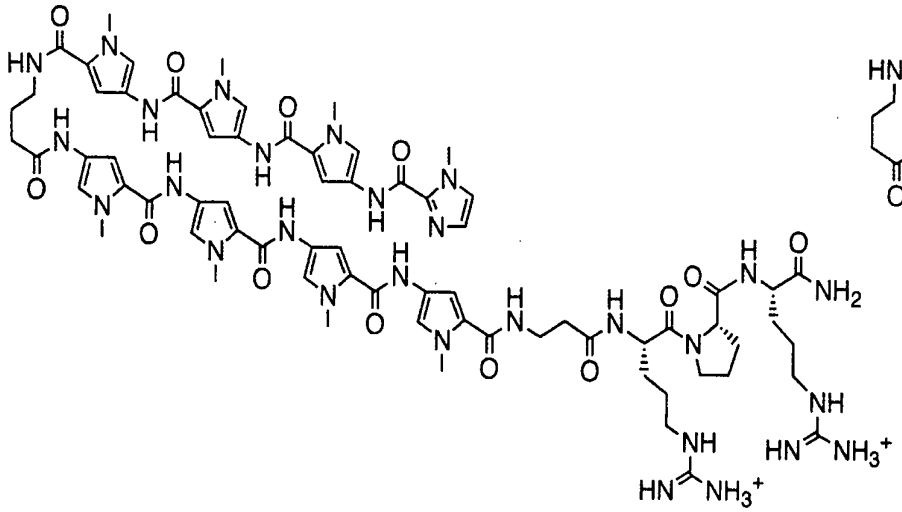
(1) ImPyPyPy-γ-PyPyPyPy-β-Dp

FIG. 2A



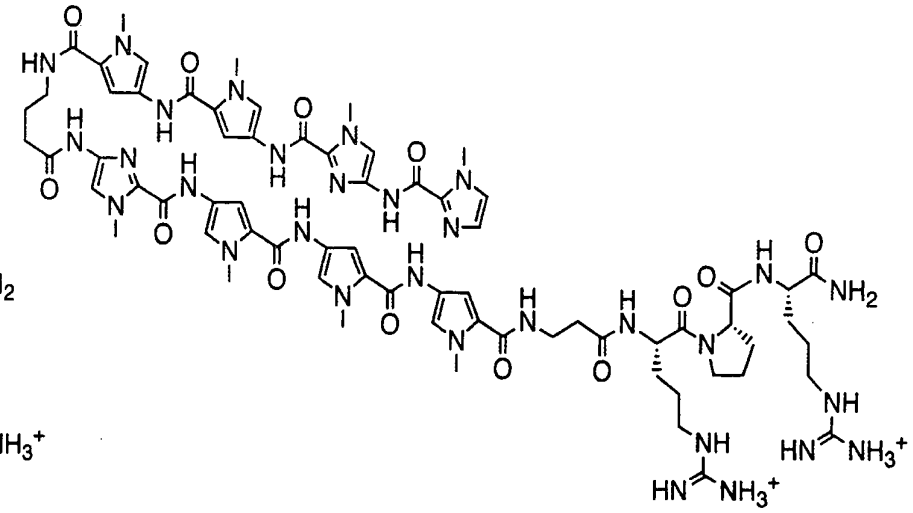
(2) ImImPyPy-γ-ImPyPyPy-β-Dp

FIG. 2B



(3) ImPyPyPy-γ-PyPyPyPy-β-RPR

FIG. 2C



(4) ImImPyPy-γ-ImPyPyPy-β-RPR

FIG. 2D

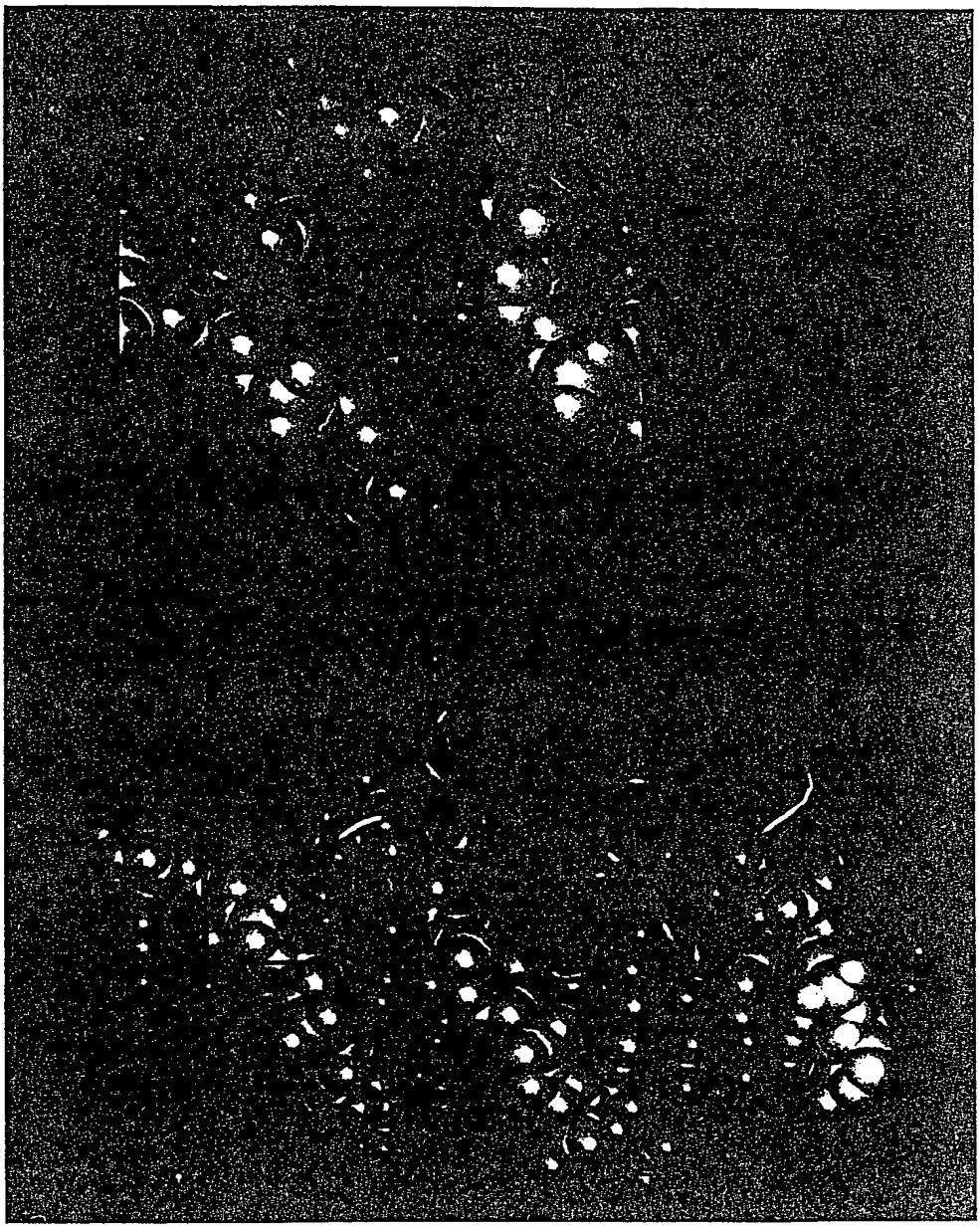
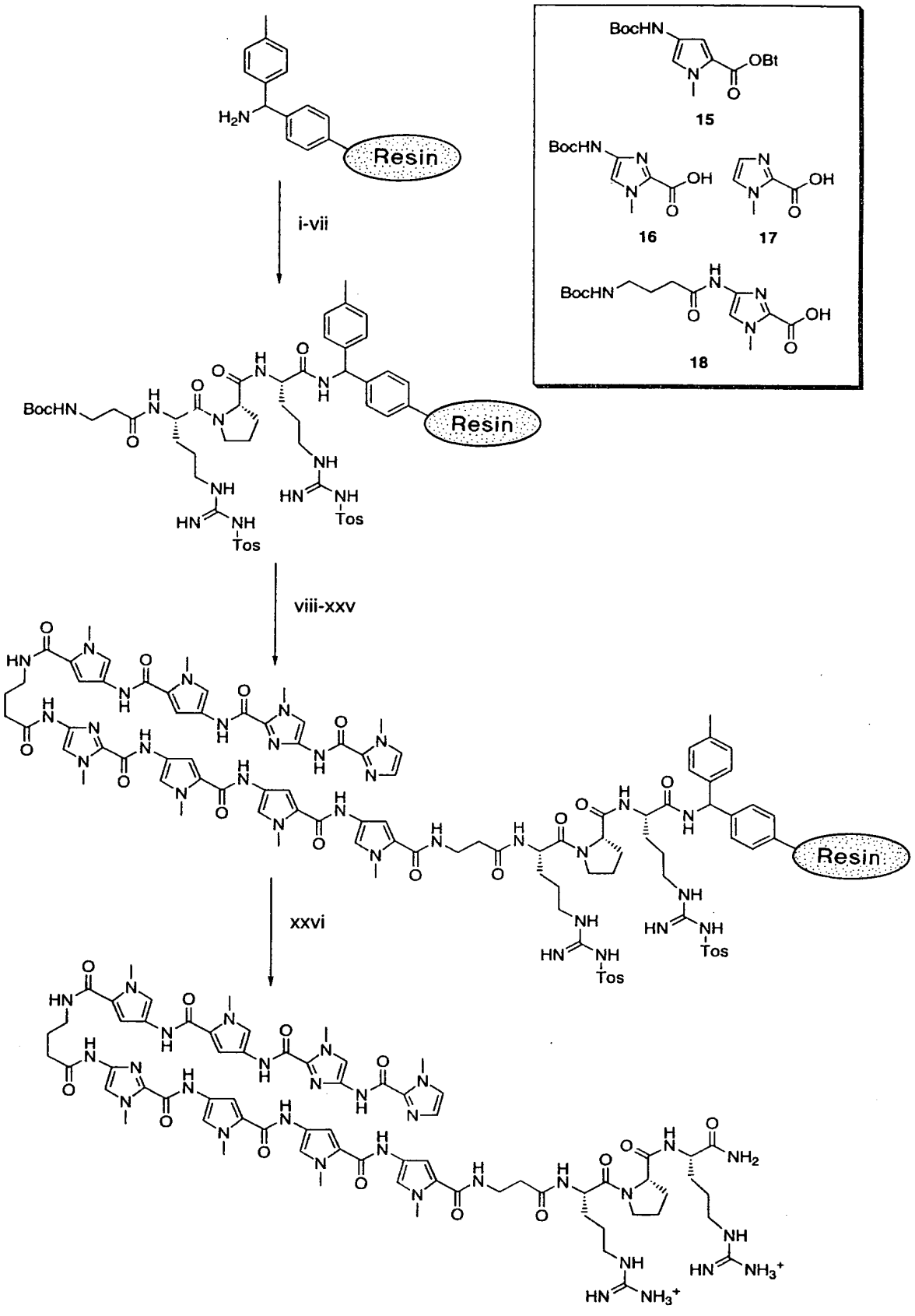


FIG. 3



ImImPyPy-γ-ImPyPyPy-β-RPR (**4**)

FIG. 4

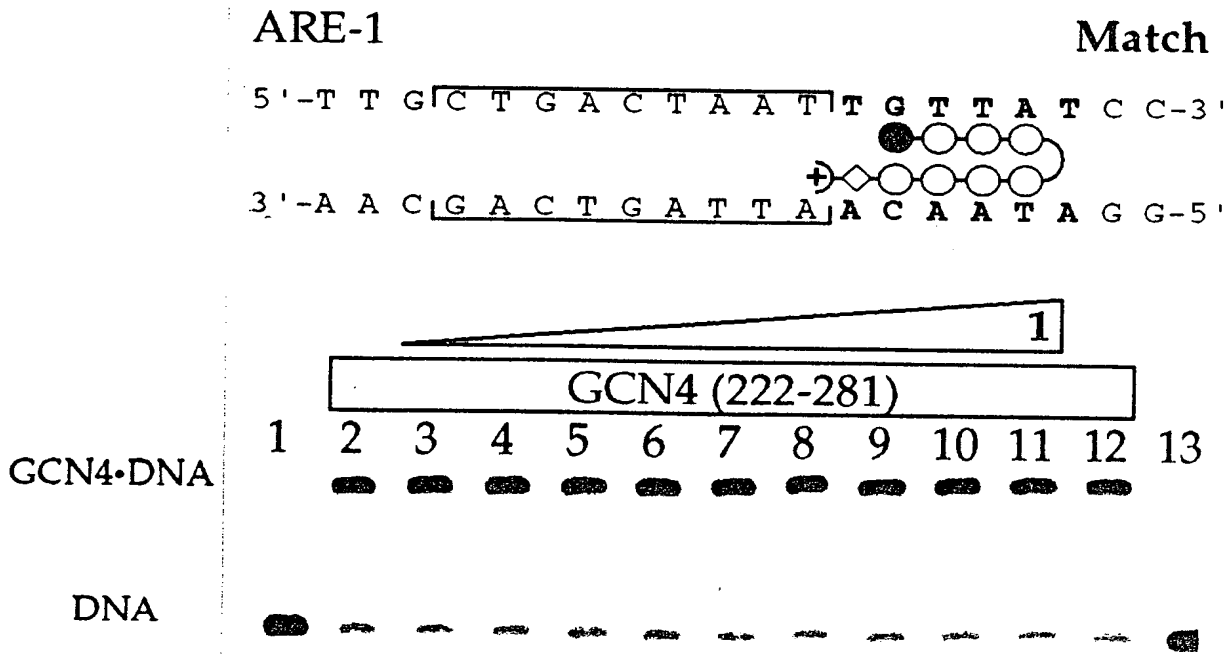

ARE-1
Match
5'-T T G C T G A C T A A T T G T T A T C C-3'
3'-A A C G A C T G A T T A A C A A T A G G-5'
1
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 5A

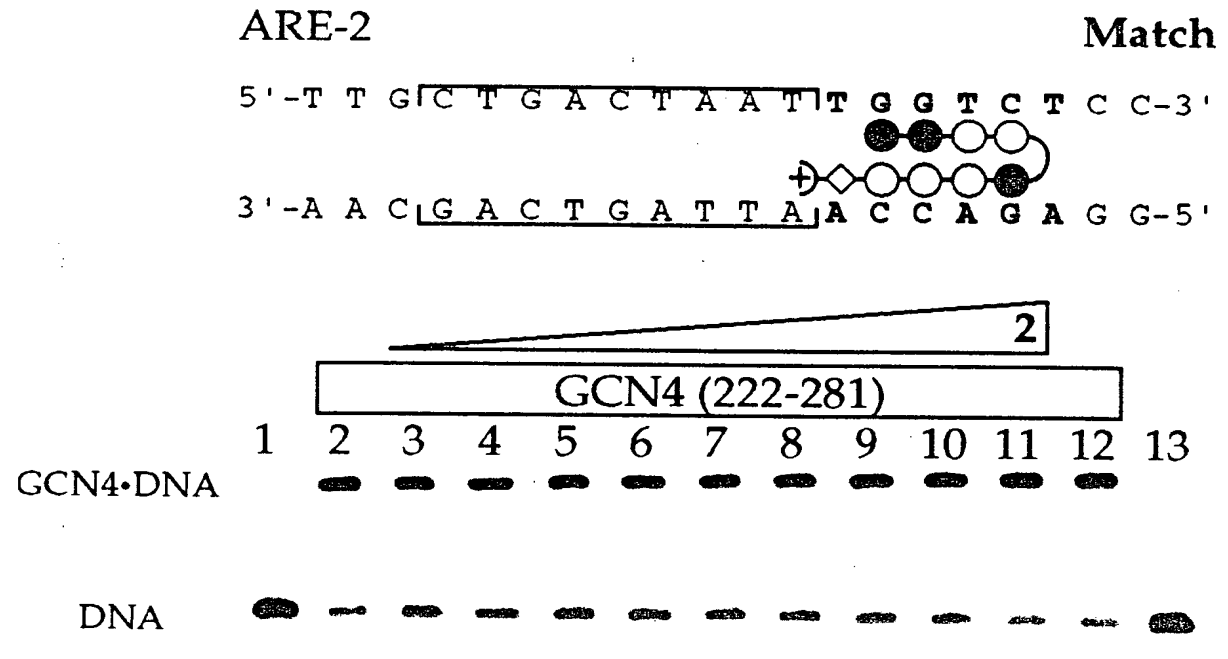

ARE-2
Match
5'-T T G C T G A C T A A T T G G T C T C C-3'
3'-A A C G A C T G A T T A A C C A G A G G-5'
2
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 5B

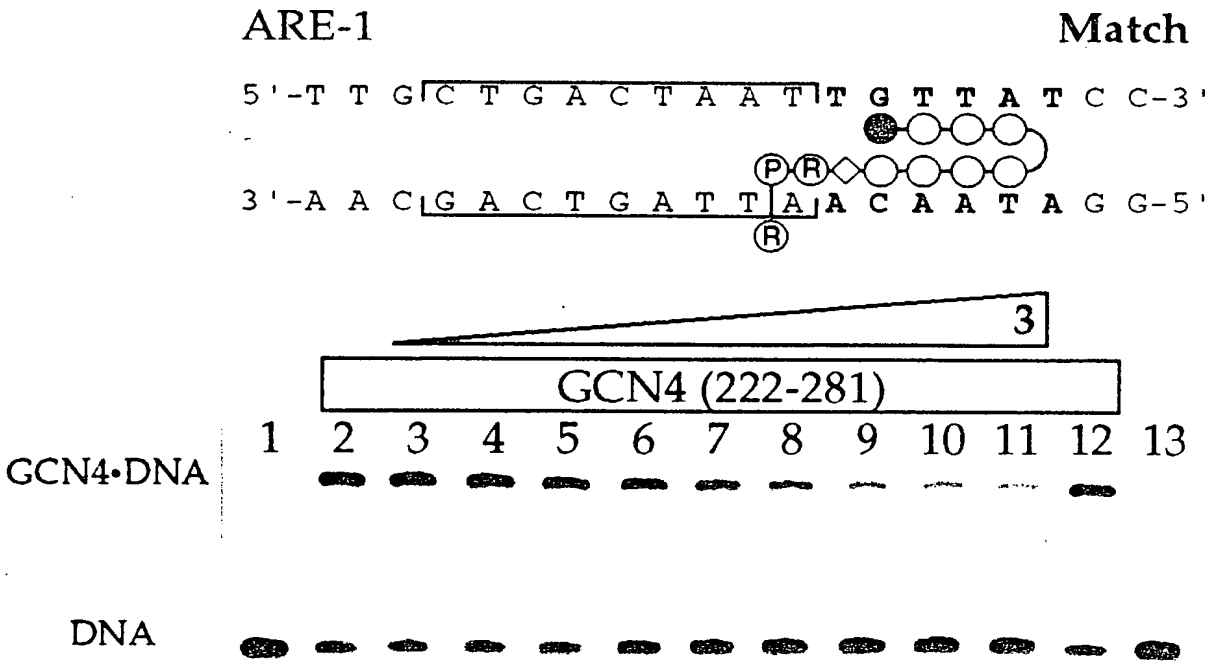

ARE-1
Match
5'-T T G C T G A C T A A T T G T T A T C C-3'
3'-A A C G A C T G A T T A A C A A T A G G-5'
P R
R
3
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 5C

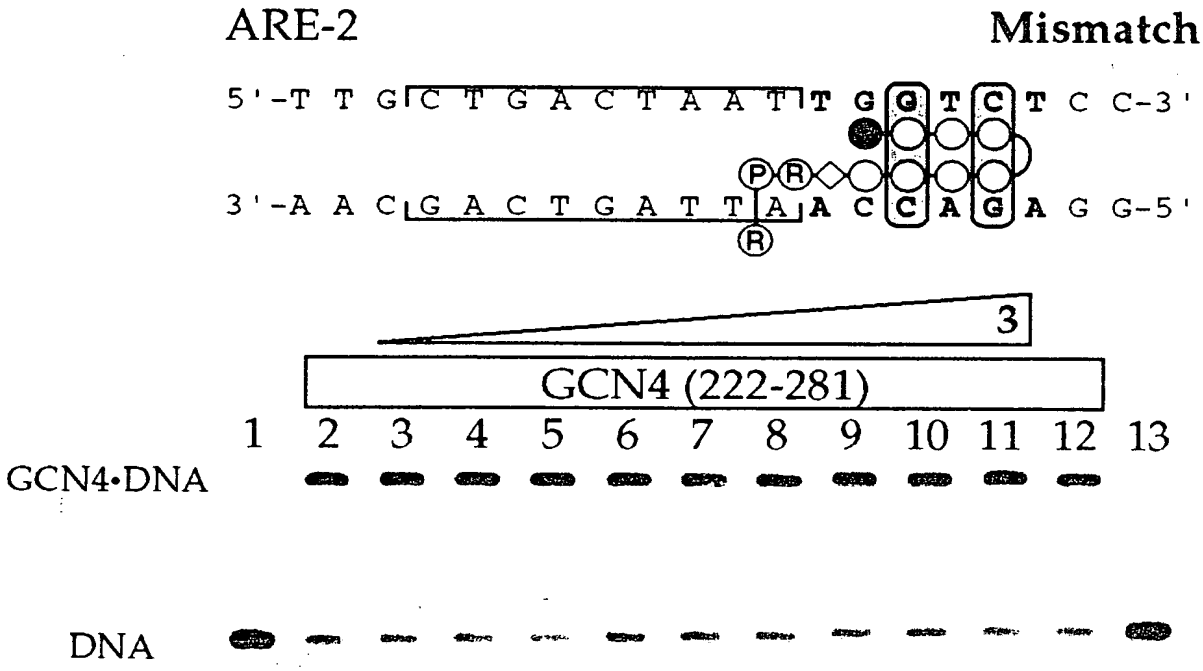

ARE-2
Mismatch
5'-T T G C T G A C T A A T T G G T C T C C-3'
3'-A A C G A C T G A T T A A C C A G A G G-5'
P R
R
3
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 5D

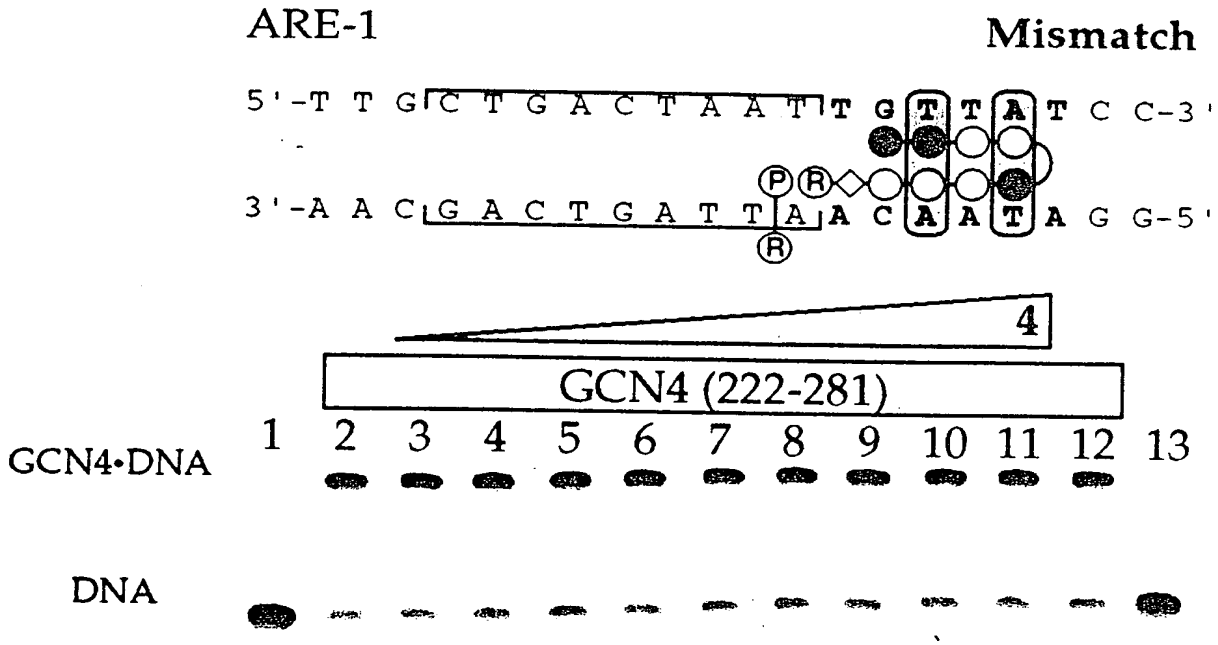

ARE-1
Mismatch
5'-T T G C T G A C T A A T T G T T A T C C-3'
3'-A A C G A C T G A T T A A C A A T A G G-5'
4
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 5E

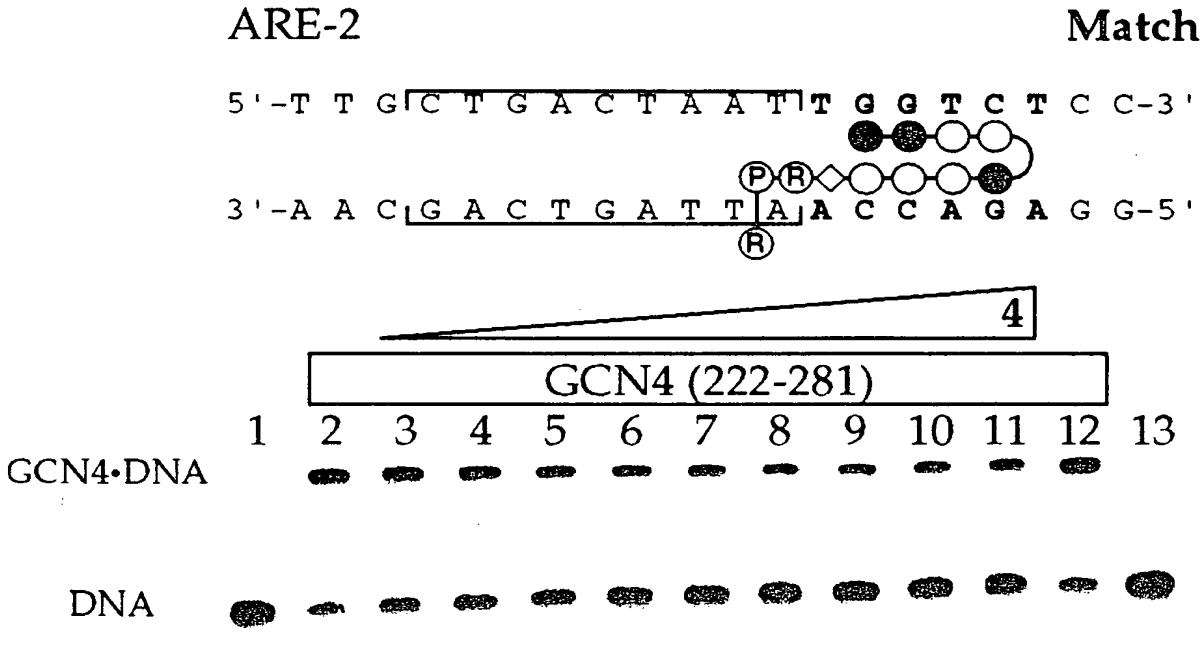
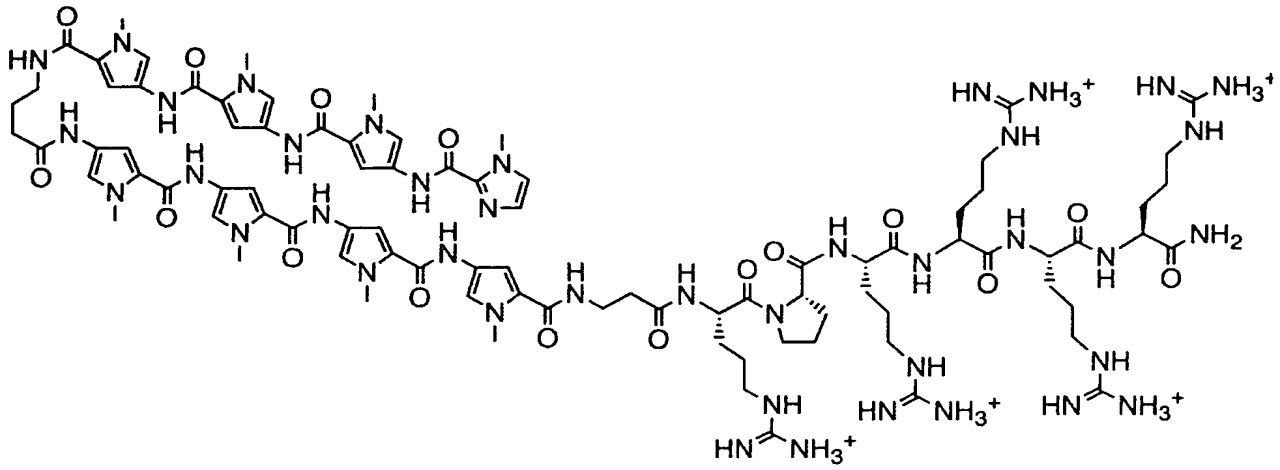
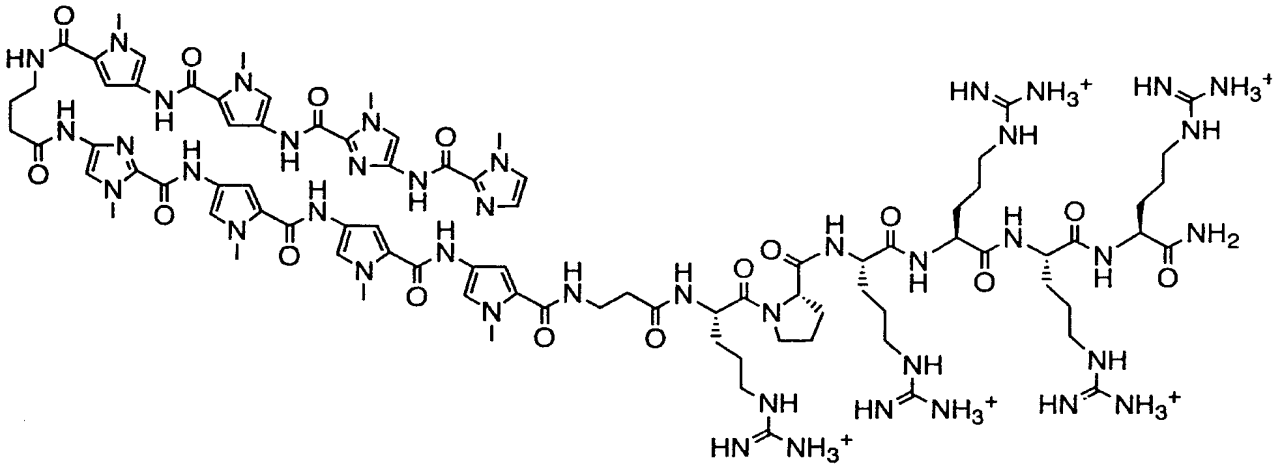

ARE-2
Match
5'-T T G C T G A C T A A T T G G T C T C C-3'
3'-A A C G A C T G A T T A A C C A G A G G-5'
4
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 5F



(5) ImPyPyPy-γ-PyPyPyPy-β-RPRRRR



(6) ImImPyPy-γ-ImPyPyPy-β-RPRRRR

FIG. 6

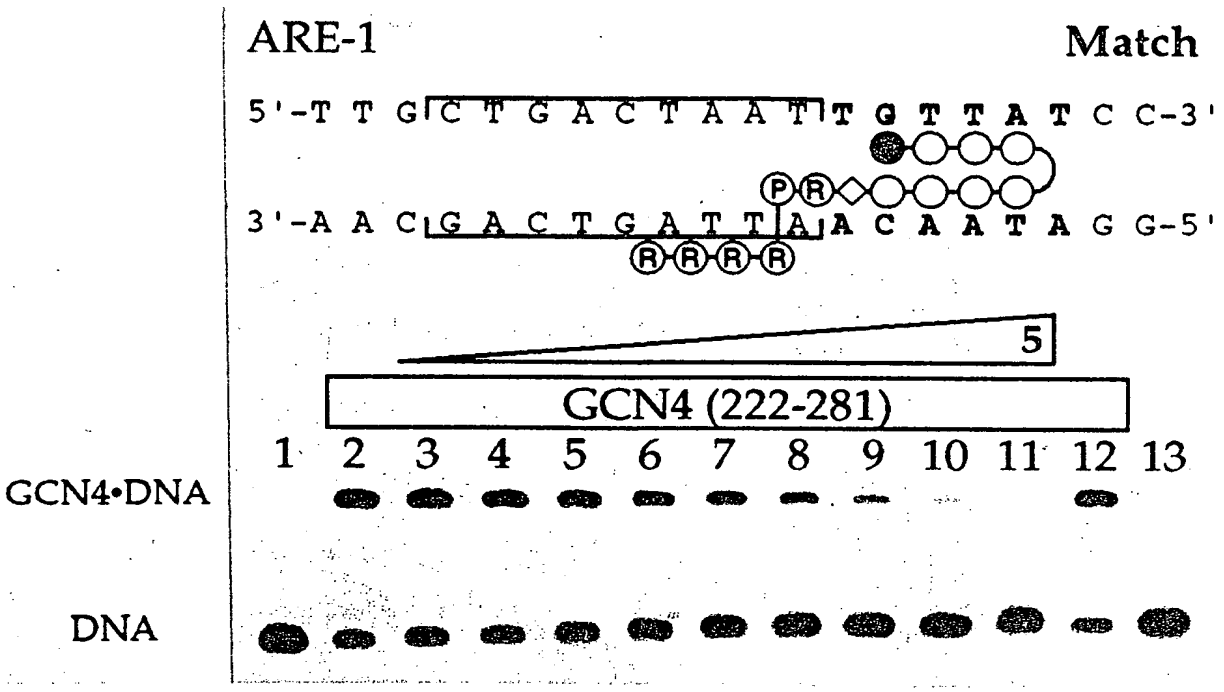

ARE-1
Match
5'-T T G C T G A C T A A T T G T T A T C C-3'
3'-A A C G A C T G A T T A A C A A T A G G-5'
5
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 7A

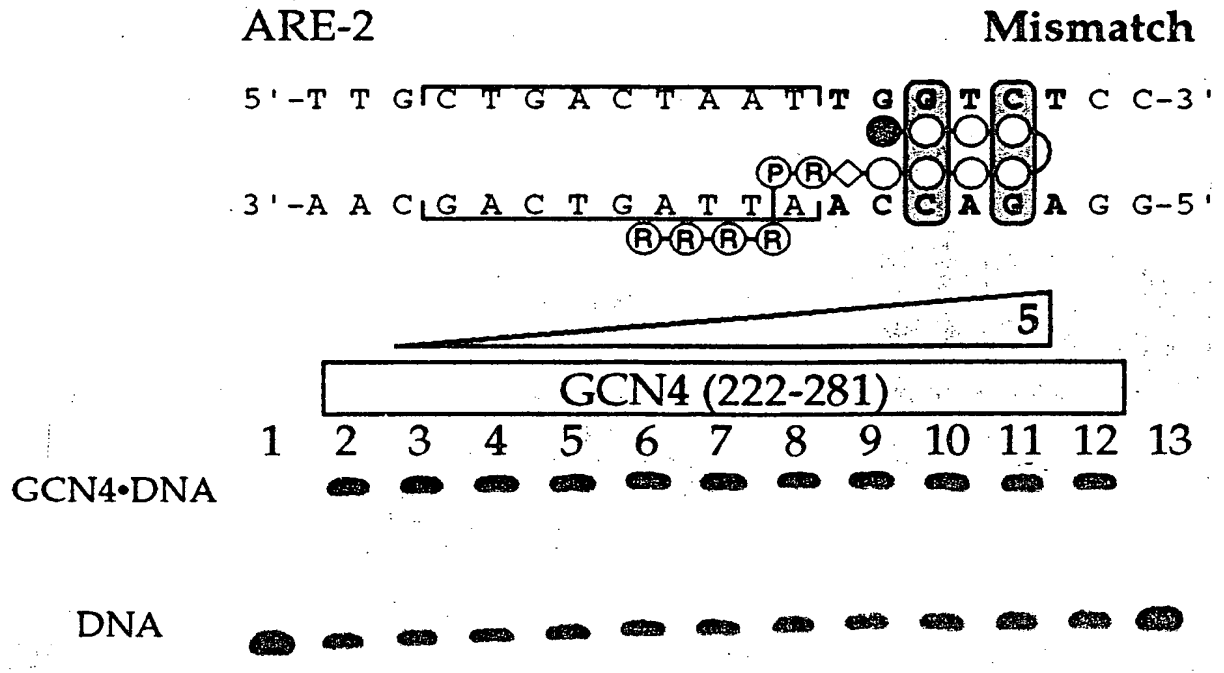

ARE-2
Mismatch
5'-T T G C T G A C T A A T T G G T C T C C-3'
3'-A A C G A C T G A T T A A C C A G A G G-5'
5
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 7B

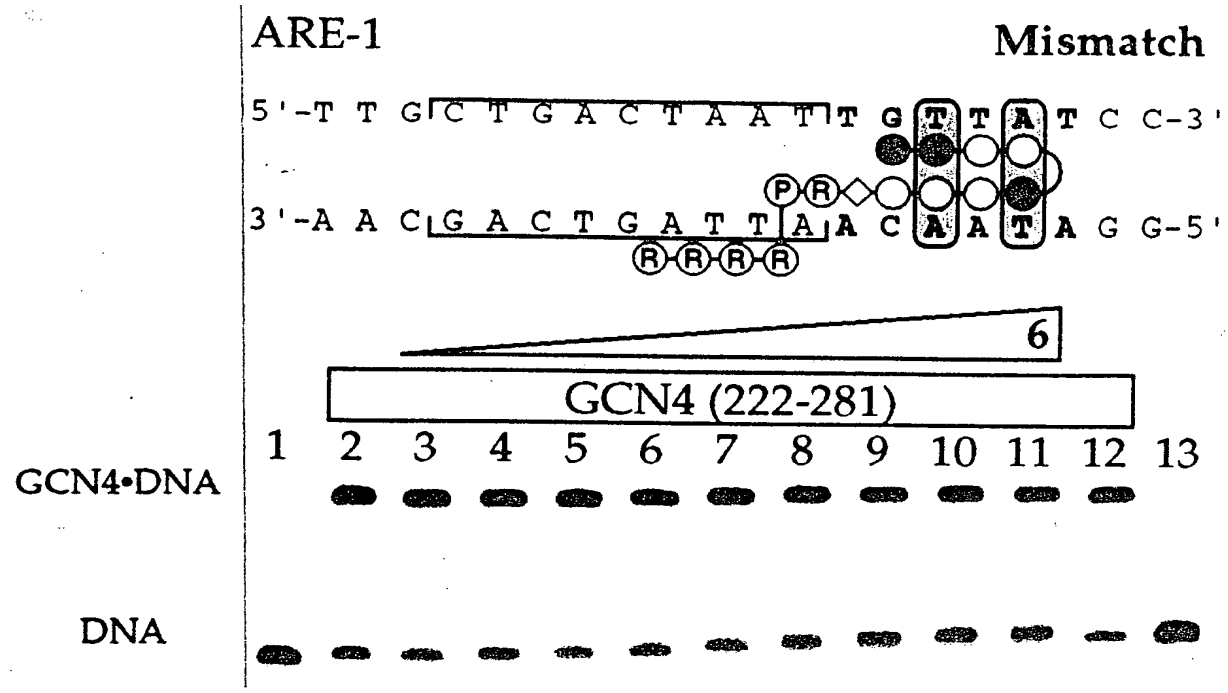

ARE-1
Mismatch
5'-T T G C T G A C T A A T T G T T A T C C-3'
3'-A A C G A C T G A T T A A C A A T A G G-5'
6
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 7C

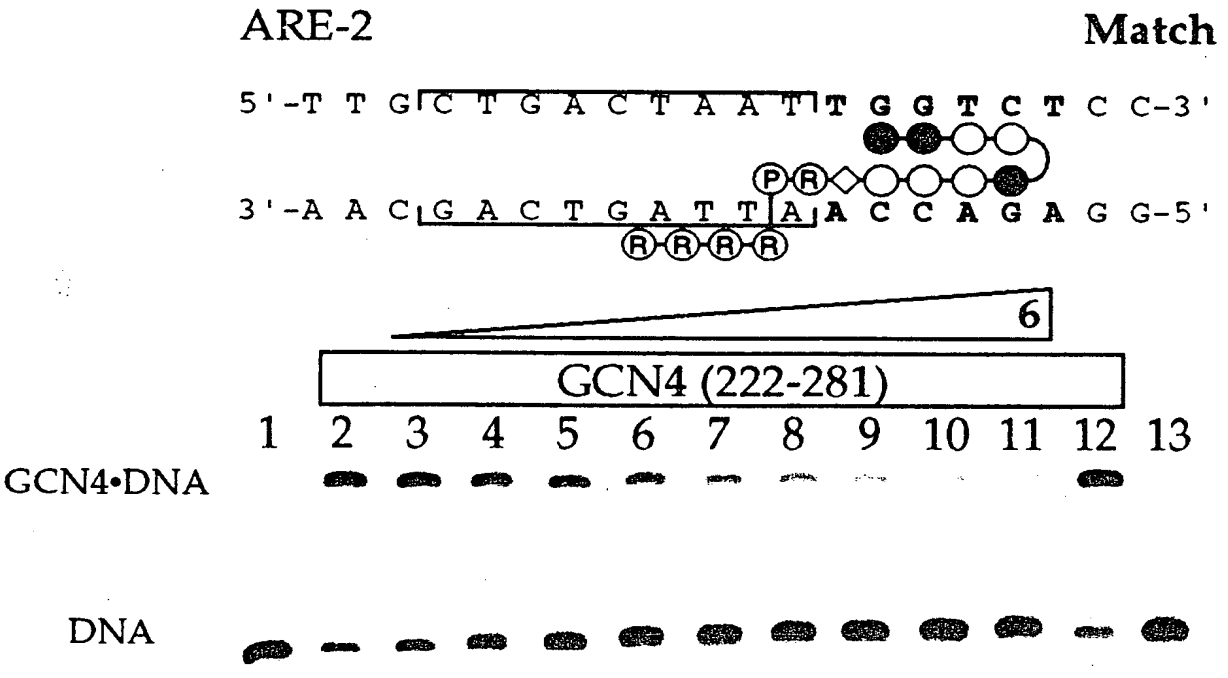
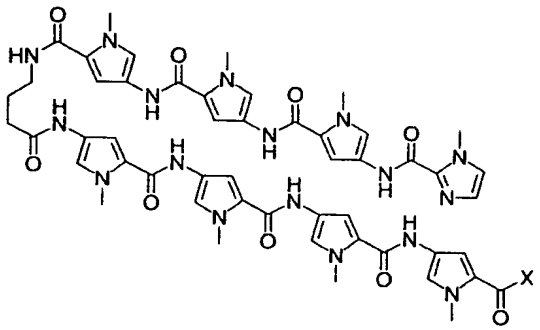

ARE-2
Match
5'-T T G C T G A C T A A T T G G T C T C C-3'
3'-A A C G A C T G A T T A A C C A G A G G-5'
6
GCN4 (222-281)
1 2 3 4 5 6 7 8 9 10 11 12 13
GCN4•DNA
DNA

FIG. 7D



ImPyPyPy-γ-PyPyPyPy-**X**

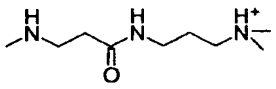
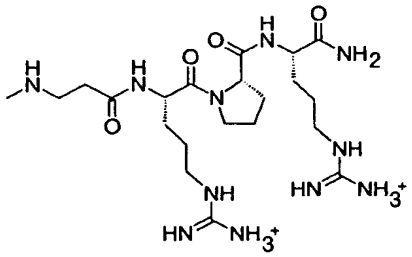
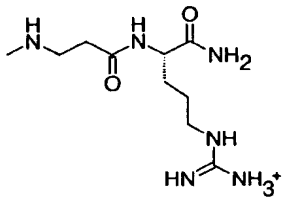
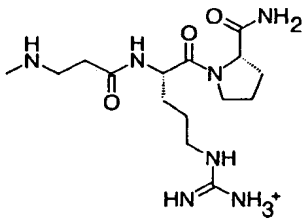
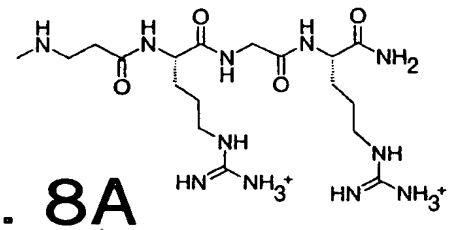
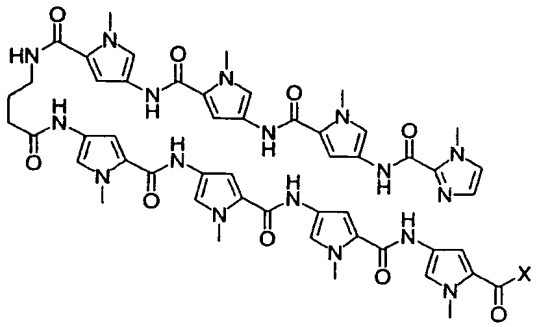
Polyamide	**X** =	Inhibition
1		β-Dp -
3		β-RPR ++
7		β-R -
8		β-RP -
9		β-RGR +

FIG. 8A



ImPyPyPy-γ-PyPyPyPy-**X**

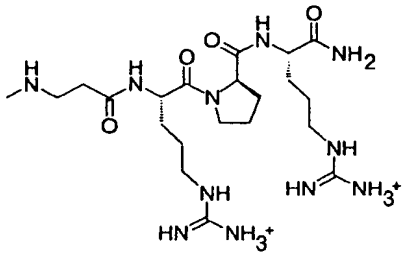
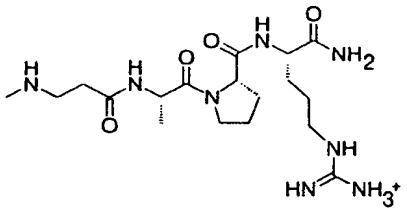
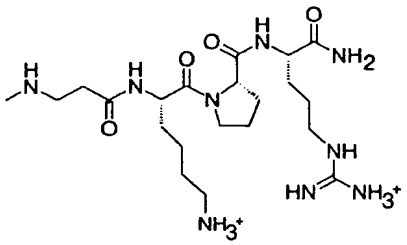
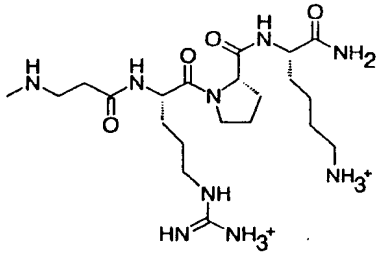
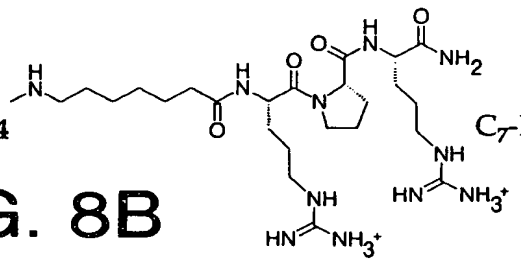
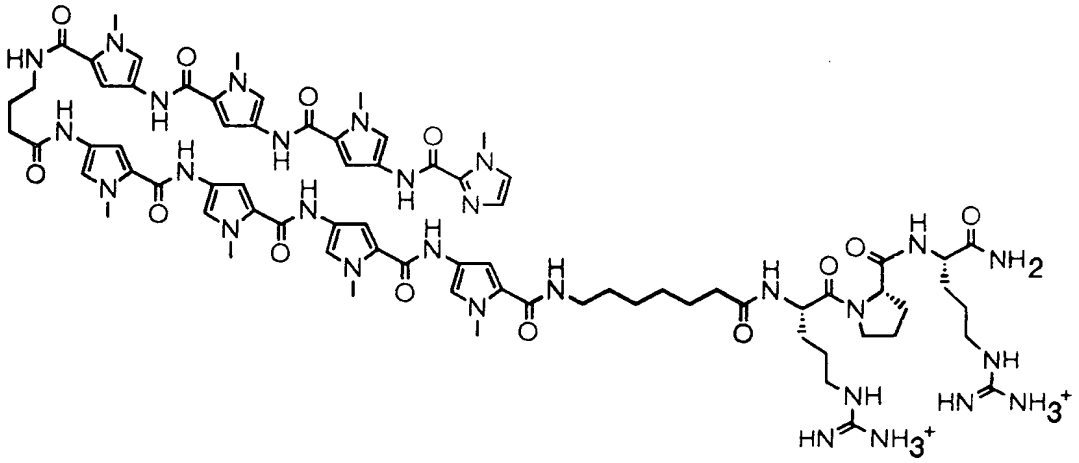
Polyamide	X =	Inhibition
10		β-R^{D}PR -
11		β-APR -
12		β-KPR +
13		β-RPK ++
14		C_7-RPR -

FIG. 8B



(14) ImPyPyPy-γ-PyPyPyPy-C7-RPR

FIG. 9

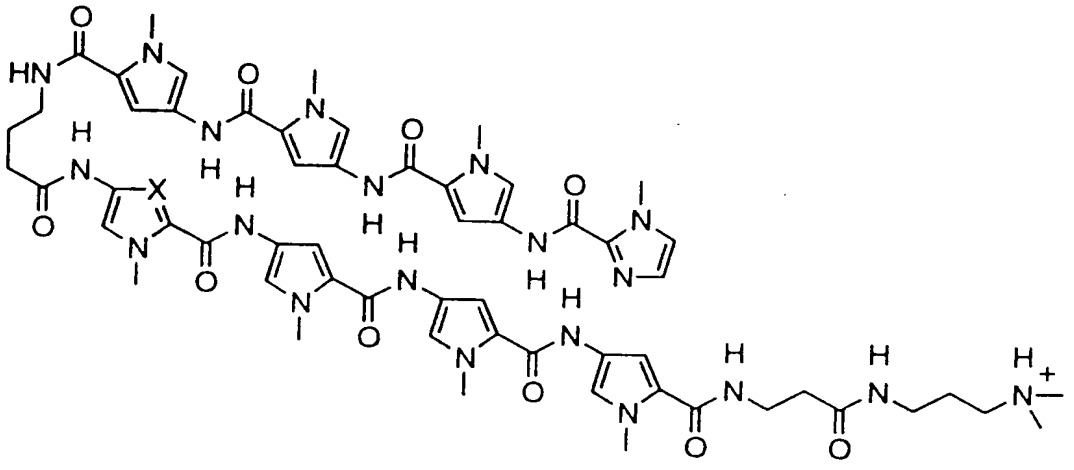
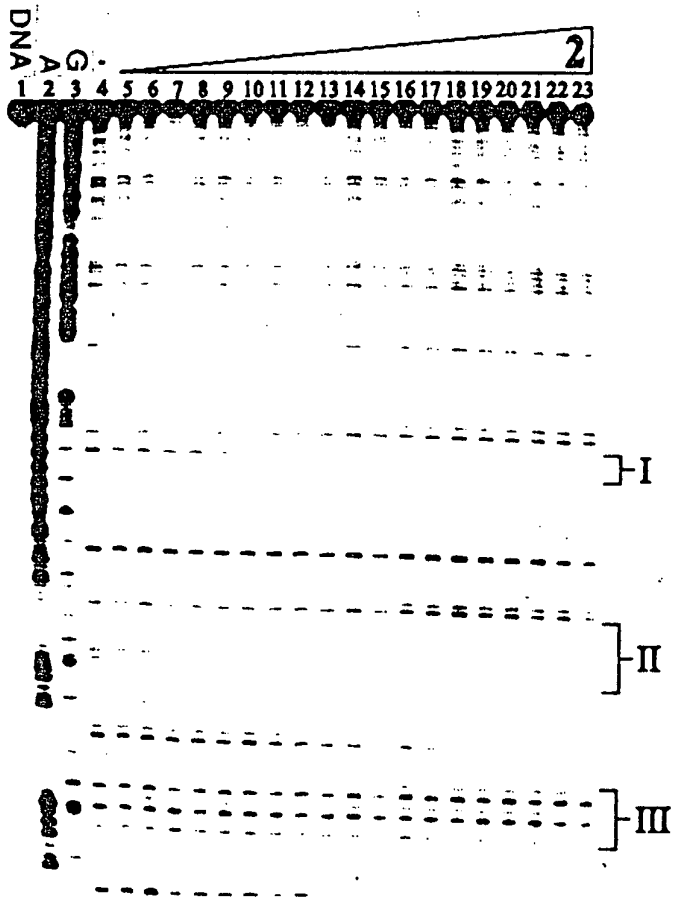
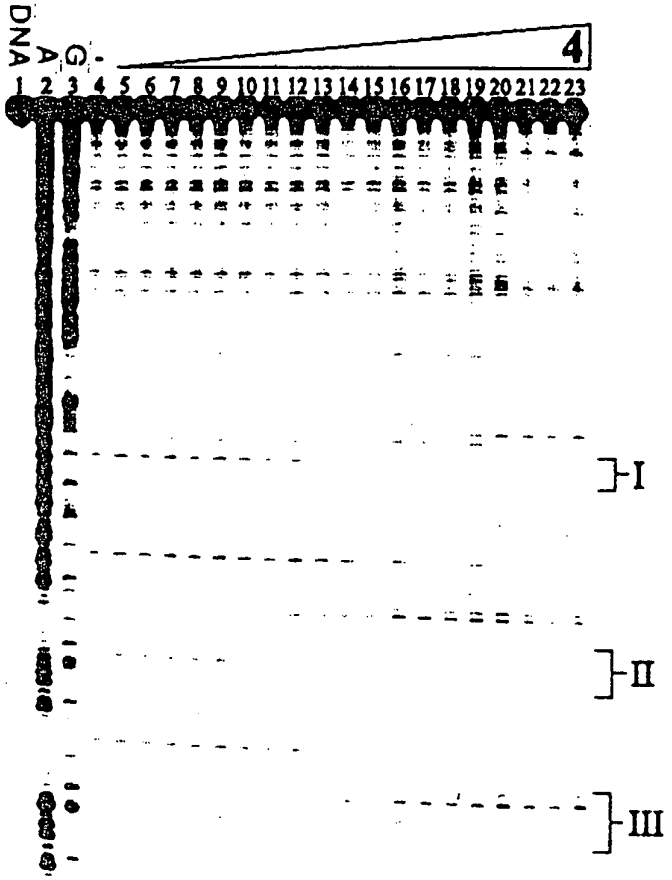


FIG. 13



	ImImPyPy-γ-ImPyPyPy-β-Dp	K_a (M^{-1})
I	5'-A A T C A T G G T C A T A-3' 3'-T T A G T A C C A G T A T-5'	1.3×10^{10}
II	5'-C T C A T T G G A C A G C-3' 3'-G A G T A A C C T G T C G-5'	6.4×10^{9}
III	5'-C T C A T T G T A C A G C-3' 3'-G A G T A A C A T G T C G-5'	$\leq 5 \times 10^{7}$

FIG. 10A



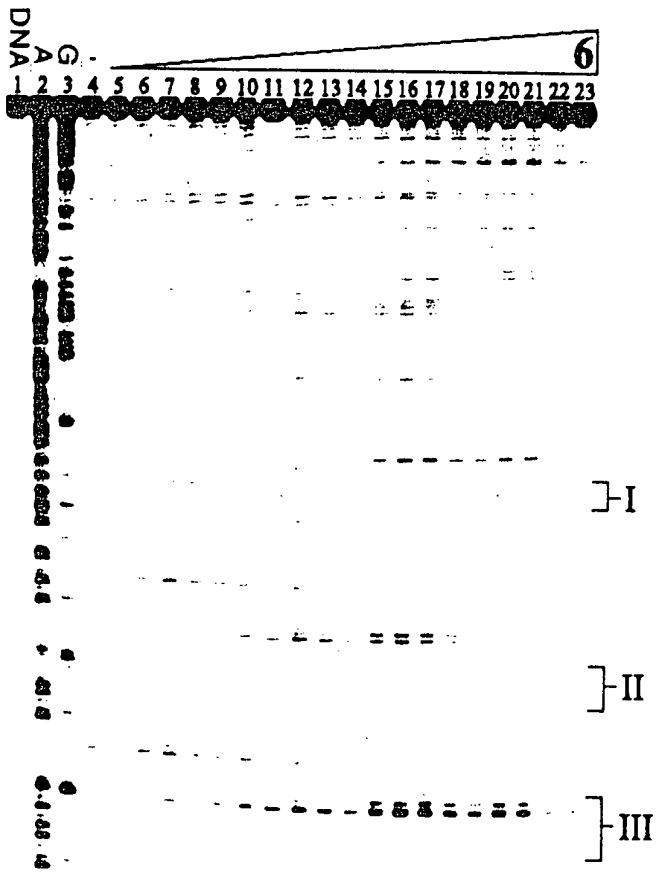
ImImPyPy-γ-ImPyPyPy-β-RPR

I
5'-A A T C A T G G T C A T A-3'
3'-T T A G T A C C A G T A T-5'
4.6×10^9

II
5'-C T C A T T G G A C A G C-3'
3'-G A G T A A C C T G T C G-5'
6.6×10^9

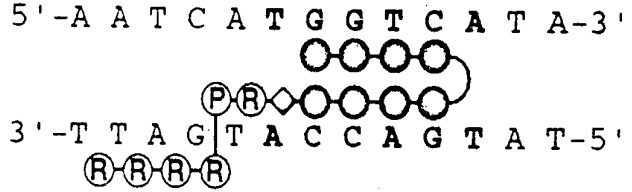
III
5'-C T C A T T G T A C A G C-3'
3'-G A G T A A C A T G T C G-5'
$\leq 1 \times 10^7$

FIG. 10B



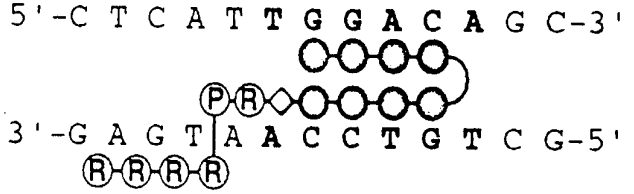
ImImPyPy-γ-ImPyPyPy-β-RPRRRR

I



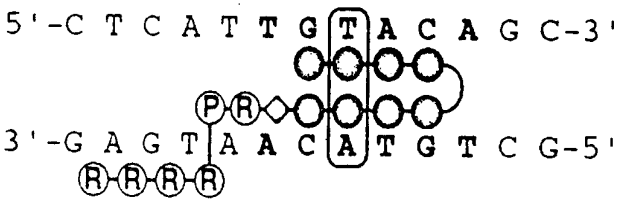
2.6×10^{10}

II



2.8×10^{10}

III



1.9×10^{10}

FIG. 10C

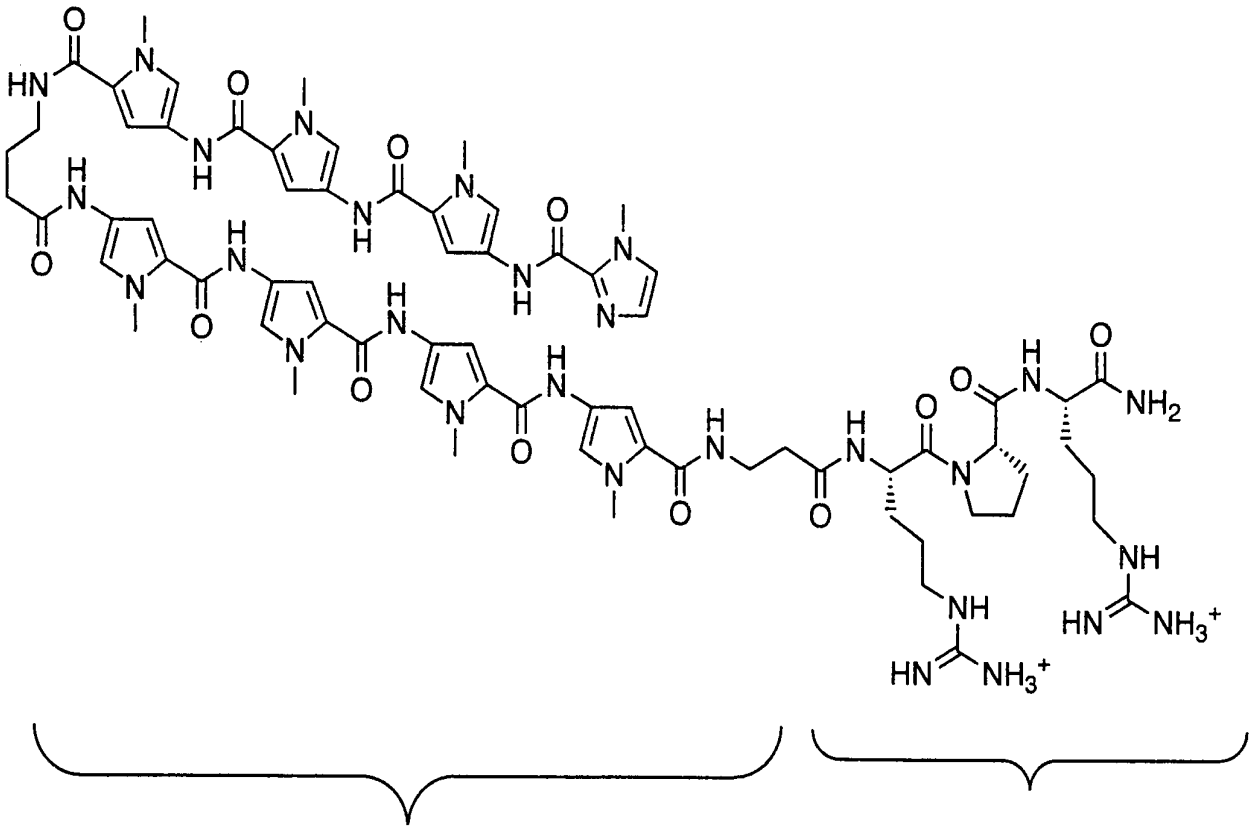
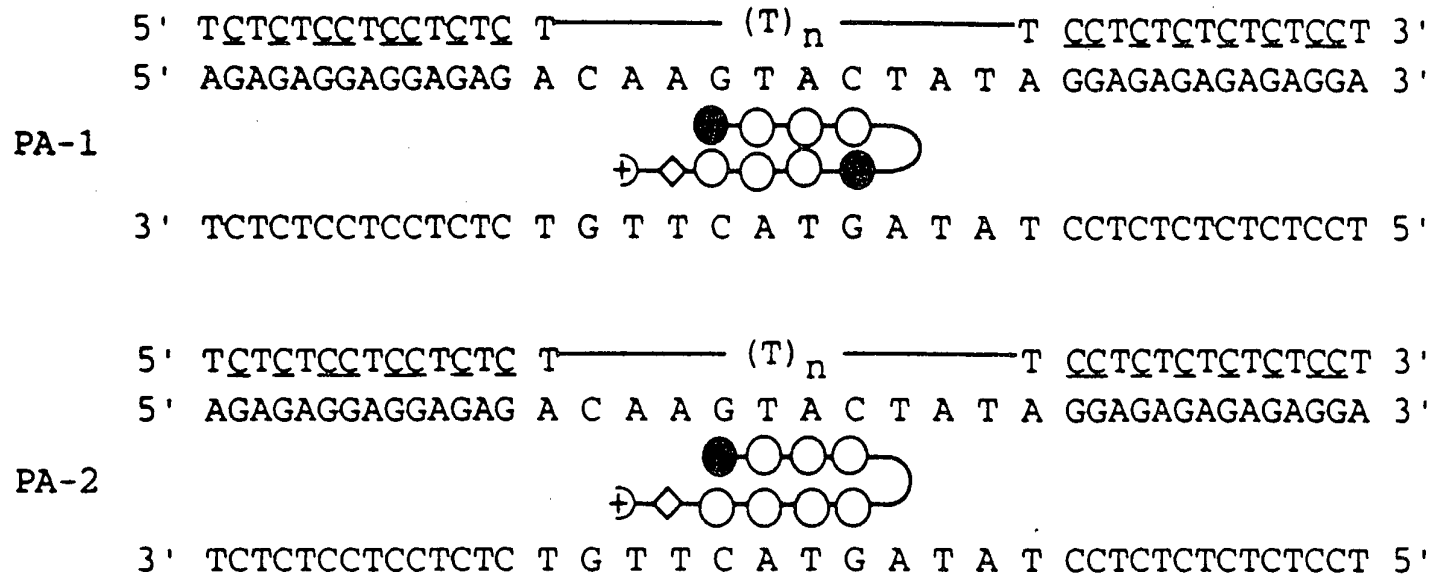

Pyrrole/Imidazole Polyamidde defines
DNA binding affinity and specificity.
Positive Patch

FIG. 11


5' TCTCTCCTCCTCTC T (T)n T CCTCTCTCTCTCCT 3'
5' AGAGAGGAGGAGAG A C A A G T A C T A T A GGAGAGAGAGAGGA 3'
PA-1
3' TCTCTCCTCCTCTC T G T T C A T G A T A T CCTCTCTCTCTCCT 5'
5' TCTCTCCTCCTCTC T (T)n T CCTCTCTCTCTCCT 3'
5' AGAGAGGAGGAGAG A C A A G T A C T A T A GGAGAGAGAGAGGA 3'
PA-2
3' TCTCTCCTCCTCTC T G T T C A T G A T A T CCTCTCTCTCTCCT 5'

n=2-6,9

FIG. 12

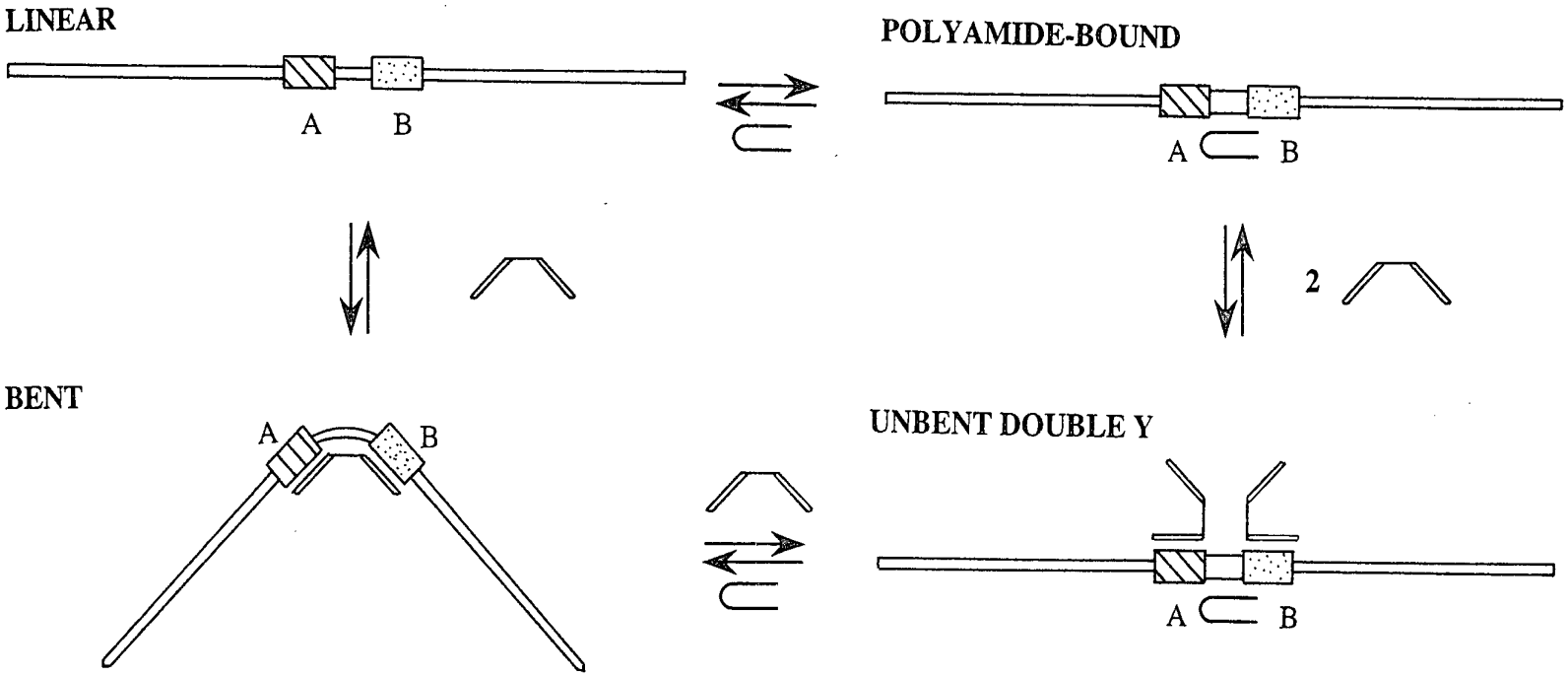


FIG. 14

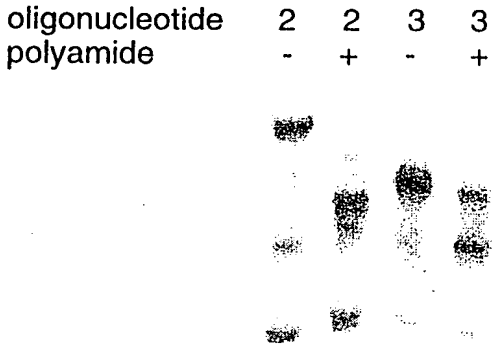


FIG. 15

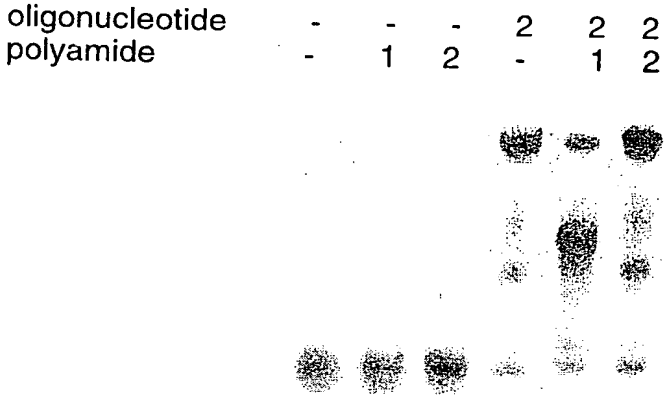


FIG. 16A

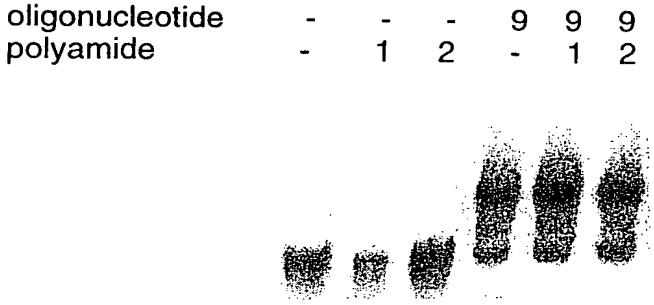


FIG. 16B

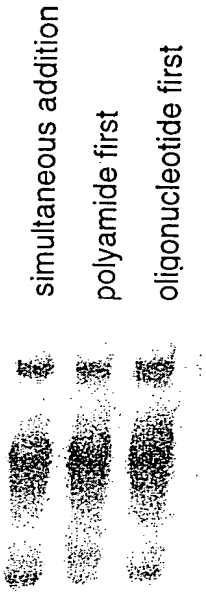


FIG. 17